The term dedoublement was first used by Payer to denote the development of two members in place of one. This phenomenon is known to occur normally in many plants, as in the inner whorl of stamens of the family Cruciferae and in the flowers of many Polygonaceae. In some other plants this phenomenon has been found to occur now and then as an abnormality. One such example has been seen by the writer in the androecium of Achyranthes aspera, Linn, and is described below.

Achyranthes aspera is a common plant all over India growing as a weed of waste places and road sides. While studying the flora of Benares and making collections of the local plants last year, the writer came across a new form of the species which was quite distinct in its habit, leaves, external morphology of the spikes, and ecologically from the typical specimens of the species and approached in these features the varieties porphyrostachya and argentea and the species Achyranthes bidentata, Blume. The plants were more or less scandent, leaves acuminate and silvery tomentose beneath; spikes were smaller in length and paniculate. The plants grew in more shaded places than the typical specimens of Achyranthes aspera and shed their leaves in winter, in fact, died, when the type specimens are in their most flourishing condition. It is hoped to publish a separate note about this variety later on in an article dealing with the flora of Benares, when the variety shall also be named.

The discovery of a new form of Achyranthes aspera, however, led the writer to study the structure of its flowers, to see if these also differed in any way from the typical specimens. About 50 flowers of the new form were examined under the binocular microscope. The structure of these was found to be similar to those of the typical specimens, but one of these was found to differ from the rest in the structure of its androecium. The normal flowers of Achyranthes aspera have 5 stamens, one opposite each perianth leaf. These alternate with 5 fringed staminodes and all together form a monadelphous androecium. In this particular

* Quoted by Rendle in the “Classification of Flowering Plants, Vol. I.”
abnormal flower, however, there were 7 stamens in place of the usual 5. Three were situated singly opposite three perianth leaves, while the other 4 were situated in two pairs, opposite the remaining two perianth

Figure 1. *Achyranthes aspera*. An abnormal androecium, showing de-doublment of stamens at two places, separated from the other parts of the flower and spread out. × 33.
leaves. Thus at two places in place of one stamen two had developed. The structure of all the stamens was similar. The abnormal androecium is sketched in text-figure 1. It has been separated from other parts of the flower and spread out. The floral diagrams of the normal and the abnormal flowers are given in text-figures 2a and b respectively. The abnormal flower was found to differ from the normal ones only in the structure of the androecium; the other parts, namely, the

Figure 2. Achyranthes aspera. (a) Floral diagram of a normal flower. (b) Floral diagram of an abnormal flower showing dedoublement of stamens at two places.
The gynoecium, perianth leaves, bracts and the bracteoles were quite similar to those of the latter. This is quite clearly shown in the floral diagrams.

The occasional occurrence of dedoublement of stamens in the flowers of *Achyranthes aspera* is of sufficient interest as throwing some light on the relationships of the family Amaranthaceae and the order Centrospermales to which *Achyranthes aspera* belongs and the order Polygonales, in which the dedoublement of members of the androecium is a normal feature of many genera. These two orders represent very natural and well defined groups, but these occupy at the present time somewhat isolated positions, though most authors have begun to put them near each other, as for instance, Engler and Prantl (2), Wettstein (8), Warming (7), Rendle (6), Hutchinson (3) and Johnson (4). Bentham and Hooker (1) put the family Polygonaceae along with such families as Amaranthaceae, Chenopodiaceae, Phytolaccaceae, etc., in one order Curvembryae, and thus think the relationship between these families to be still closer.

The abnormality described above in the androecium of *Achyranthes aspera*, supports the relationship of the order Polygonales with the order Centrospermales. The floral diagram of the abnormal flower of *Achyranthes aspera* is not much different from that of some species of *Polygonum*. It may be suggested that the two orders came from a common stock, in which there was a tendency towards the multiplication of stamens by dedoublement. In one line, namely, the Polygonales, this tendency later on developed to the fullest in various ways and gave rise to many distinct forms. In the order Centrospermales, it was more or less suppressed except in the family Phytolaccaceae, but that it was present in the whole order is supported by the rare occurrence of such an abnormal flower, as has been described above in *Achyranthes aspera*.

Within the order Centrospermales, the rare occurrence of dedoublement in the androecium of *Achyranthes aspera*, supports the relationship of the family Amaranthaceae directly with the family Phytolaccaceae. This abnormal androecium can be very easily compared with the androecium of such flowers as *Phytolacca decandra*, a floral diagram of which is reproduced by Rendle (6) on page 109 from Eichler. This conclusion agrees with conclusions of Pax (5) and Wettstein (8).

**Summary.**

1. A case of dedoublement of stamens at two places in a flower of *Achyranthes aspera*, is described.
2. This supports the relationship of the order Centrospermales with the order Polygonales and of the family Amaranthaceae with the family Phytolaccaceae.

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References.